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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Huan-sheng Hwang

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EXAMINER

A, MINH D

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/691,150	Applicant(s) HWANG ET AL.	
	Examiner MINH D. A	Art Unit 2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-38 is/are allowed.
- 6) ☒ Claim(s) 1-16, 19 and 39-43 is/are rejected.
- 7) ☒ Claim(s) 17 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-9, 12-13 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Izadian (U.S Patent No: 5, 300, 936) in view of Suguro (U.S Patent No: 6, 459,916).

Regarding claim 1, Izadian discloses, in figure 1, an antenna comprising a ground plane (28, col.3, line 51-52); a conductor loop (loop radiator (26)) overlying the ground plane (28); and a monopole (22) extending off the ground plane (28) from the a location overlying the ground plane (28) Col.3, lines 45-58.

Izadian does not teach that, wherein the monopole (22) and the conductor loop (28) are configured to be coupled to a common feed-point.

Surguro discloses in figure 5, a signal synthesizer (32) is connected to a radio communication section (31) and both antennas (40 and 14) have a different main beam radiating direction, but have the same operating frequency band, col.4, lines 35-41, therefore, the both antenna are coupled to the signal synthesizer (32) to the radio communication (31) define as the common feed point).

It would have been obvious to one having ordinary skill in the art to employ the radio communication section (31) disclosed in Reference of Surguro in the multiple

antenna of Izadian to achieve the claimed invention. As disclosed in Reference of Surguro, the motivation for the combination would be to combine the both antenna to operating the same frequency.

Regarding claim 2, Izadian disclose, wherein the conductor loop (26) has a reflective feature therein since the conductor loop (26) is conductive or current can be drive it for radiating or reflect such as signal from antenna.

Regarding claim 3, Izadian discloses figure 1, the reflective feature having a corner.

Regarding claim 4, Izadian discloses in figure 1, wherein the conductor loop (26) is rectangular.

Regarding claim 5, Izadia discloses in figures 1 and 3, wherein the conductor loop (26) is substantially parallel to the ground plane (28).

Regarding claim 6, the combination of Izadian and Surguro disclose the claimed of invention except for the monopole is substantially parallel to the conductor loop.

It would have been obvious to one of ordinary skill in the art to utilize the monopole antenna for parallel to the conductor loop, since it is known and well suited for the designed use. The selection of the monopole antenna for parallel to the conductor loop based on its suitability for its designed use supported a prima facie obviousness determination.

Regarding claim 7, the combination of Izadia and Surguro disclose the claimed of invention except for the monopole (22) is coupled to the conductor loop (26) at a comer.

It would have been obvious to one of ordinary skill in the art to utilize the monopole antenna is coupled to the conductor loop at a corner, since it is known and well suited for the designed use. The selection of the monopole antenna and the conductor loop at corner based on its suitability for its designed use supported a prima facie obviousness determination.

Regarding claims 8 and 13, the combination of Izadia and Surguro disclose the claimed invention except for a frequency range from about 1.5 GHz to about 2.5 GHz. However, this difference is not of patentable merit, since arrange from difference frequency is operated in the same manner, provide a high frequency for mobile or cellular phone. Therefore, to employ a frequency range from about 1.5 GHz to about 2.5 GHz of antenna of the Izadia upon a particular application or frequency of use would have been deemed obvious to a person skilled in the art.

Regarding claim 9, the combination of Izadia and Surguro disclose the claimed of invention except for wherein the conductor loop (26) is positioned adjacent an edge of the ground plane (28), and wherein the monopole(22) extends off the edge of the ground plane(28).

However, this difference is not of patentable merit, since the conductor loop(26) of Izadia and Surguro could be located into another position of groundplane and the monopole(22) could be located into another position of groundplane, therefore, to design the conductor loop(26) and the monopole (22) at the edge of the groundplane upon a particular application or environment of use would have deemed obvious to a person skilled in the art.

Regarding claims 12, 19, Izadia essentially disclose the claimed of invention but does not explicitly disclose that, the helical element arranged coaxial with the monopole and configured to be coupled to the common feed point.

Surguro discloses in figure 1, the helical element (14) arranged coaxial and configured to be coupled to the common feed point(a signal synthesizer (32) is connected to a radio communication section (31) and both antennas (40 and 14) have a different main beam radiating direction, but have the same operating frequency band, col.4, lines 35-41, therefore, the both antenna are coupled to the signal synthesizer (32) to the radio communication (31) define as the common feed point).

It would have been obvious to one having ordinary skill in the art to employ the helical element arranged coaxial and configured to be coupled to the common feed point disclosed in Reference of Surguro in the multiple antenna of Izadian to achieve the claimed invention. As disclosed in Reference of Surguro, the motivation for the combination would be to operate multiple frequency.

3. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Izadian (U.S Patent No: 5, 300, 936) in view of Suguro (U.S Patent No: 6, 459,916) and Sanford et al (U.S Patent No: 6, 424,300).

Regarding claims 10-11, the combination of Izadian and Surguro does not clearly disclose that, wherein the ground plane comprises a conductive layer on the print circuit substrate and the common feed point comprises a pad on the print circuit substrate.

Sanford et al disclose in figure 7A, a conductive layer (702) on the print circuit substrate (704) and a pad (ground pad (706)) on the print circuit substrate (704). Col.17, lines 8-43.

It would have been obvious to one having ordinary skill in the art to employ the conductive layer on the print circuit substrate and pad on the print substrate a retractable monopole configured to extend and retract through the helical element and configured to connect to the common feed-point in an extended position disclosed in Reference of Klemens et al in the multiple antenna of Izadian to achieve the claimed invention. Because it is desirable for mobile phones to have antennas that are retractable.

4. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Izadian (U.S Patent No: 5, 300, 936).

Regarding claim 16, Izadian discloses in figure 1 that, an antenna, comprising: a rectangular ground plane (28); a rectangular conductor loop (26) overlying the ground plane (28) and having a side substantially aligned with the rectangular ground plane (28); a monopole (22) comprising a substantially linear conductor that extends substantially perpendicular to the ground plane (28) from a coupling the rectangular conductor loop (26) on the ground plane. Col.3, lines 45-58.

Izadian does not disclose that, the rectangular conductor loop having the side substantially aligned with the edge of the rectangular ground plane; the monopole extends substantially perpendicular to the edge of the ground plane from a coupling point at the corner of the rectangular conductor loop at the edge of the ground plane.

However, this difference is not of patentable merit, since the conductor loop(26) of Izadia could be located into another position of groundplane and the monopole(22) could be located into another position of groundplane, therefore, to design the conductor loop(26) and the monopole (22) at the edge of the groundplane upon a particular application or environment of use would have been deemed obvious to a person skilled in the art.

Claims 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Suguro (U.S Patent No: 6, 459,916) in view of Klemens et al (U.S Patent No: 6, 239, 755).

Regarding claim 39, Suguro discloses in figures 4-5, a frame, a radio communication (see figure 1, a ground plane (under dielectric sheet (3)) disposed on the circuit (30) supported by the frame (portable telephone) and antenna (flat antenna(40)) electrically coupled to the radio communication circuit (31), attached to the frame (92) and comprising commonly fed conductor loop(2) and monopole (14) and helical elements (see figure 4). Col.2, lines 54-67 to col.5, lines 1-25.

Suguro does not teach wherein the monopole is positioned within the helical element along an axis of the helical element.

Klements et al disclose in figure 6A, the monopole (radiator (604) is positioned within the helical element (606) along an axis of the helical element (606).

It would have been obvious to one having ordinary skill in the art to employ the radio communication section (31) disclosed in Reference of Suguro in the multiple

antenna of Izadian to achieve the claimed invention. As disclosed in Reference of Surguro, the motivation for the combination would be to improve high performance radio frequency for mobile phone.

Regarding claim 40, Suguro discloses in figures 4-5, wherein the conductor loop (conductor (2)) has a reflective feature therein since the conductor loop is conductive or current can be drive it.

Regarding claims 41-42, Suguro discloses, in figures 4-5, the reflective feature having a corner.

Response to Arguments

5. Applicant's arguments with respect to claims 1-43 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

6. Claims 17-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior art does not teach wherein the conductor loop has dimensions of about 18 mm by about 8 mm, has a longer side thereof substantially aligned with the edge of the ground plane, and is separated from the ground plane by a distance in a frequency range from about 5 mm to about 10 mm; and wherein the monopole has a length of about 36 mm recited in dependent claim 17.

Claims 20-38 are allowed.

Prior art does not teach that, a conductor loop support by the frame and overlying the ground plane and wherein the monopole support by the frame and extending off the ground plane from the a location overlying ground plane and wherein the monopole supported and the conductor loop are configured to be coupled to a common feed-point (1) in combination with all limitations recited in independent claim 20.

Citation of relevant prior art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Woo (US 6,317,086) and Bowers et al (US 5,914,692) are cited to show a multiple loop antenna.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Dieu A whose telephone number is (571) 272-1817. The examiner can normally be reached on M-F (5:30 AM-2: 45 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Owens Douglas W can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner

Minh A

Art Unit 2821

9/25/08

/Douglas W Owens/

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Supervisory Patent Examiner, Art Unit 2821
May 27, 2008